BRAINWARE UNIVERSITY

Term End Examination 2020 - 21

Programme – Master of Science in Biotechnology

Course Name – Cell Culture Technique: Plant, Animal & Microbes

Course Code - MBT304

Semester / Year - Semester III

Time allotted : 75 Minutes | Full Marks : 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 60=60

1. *(Answer any Sixty)*

(i) First vaccine was developed using animal cell culture was…

a) Hepatitis B vaccine
b) Small pox vaccine
c) Influenza vaccine
d) Polio vaccine

(ii) In 1880s, Arnold showed_____ can divide outside body

a) RBC
b) Leucocytes
c) Platelets
d) None of these

(iii) The term Tissue culture refers to

a) Culture of whole organ
b) Culture of tissue fragments
c) Culture of dispersed cells
d) All of these

(iv) EDTA binds the _____ ions.

a) Ca
b) Fe
c) Br
d) Mg

(v) For adherent cells, adhesion provides a signal for cells to do which of the following.

a) Grow and divide
b) Transduce differentiation signals
c) Enhance survival
d) All of these

(vi) Paracrine signals come from which of the following?

a) Components in the basal media
b) Other neighboring cells
c) They are added by the researcher depending on their experiment
d) Unwanted cell culture contaminants

(vii) A dividing and undifferentiated mass of cells is called

a) Callus
b) Embryo
c) Explant
d) Zygote

(viii) Which of the following is NOT the major function of the serum?

a) Promotion of tuber and bulb formation
b) Stimulate cell growth
c) Enhance cell attachment
d) Provide transport proteins

(ix) Name the cell line of the human embryonic lung?

a) HeLa
b) WISH
c) L-132
d) MRC-5

(x) Which of the following is NOT the feature of plant cells?

a) Presence of centrioles
b) The cell wall outside the cell membrane
c) Cell-cell communication through plasmodesmata
d) Consists of plastids

(xi) Out of the following, which one is NOT the basic component of culture media used for plant cultivation?

a) Complex mixture of salts
b) Amino acids
c) Serum albumin
d) Sugar/ sucrose

(xii) Which of the following is NOT a plant growth regulator?

a) Auxin
b) Cytokinins
c) Abcisic acid
d) Polyphenols

(xiii) Which of the following is the main effect of cytokinin in the tissue culture system?

a) Adventitious shoot formation
b) Induction of somatic embryos
c) Adventitious root formation
d) Shoot elongation

(xiv) Which one of them is NOT the main effect of polyamines in the tissue culture system?

a) Promotion of tuber and bulb formation
b) Adventitious root formation
c) Promotion of shoot formation
d) Somatic embryogenesis

(xv) Embryo initiation is facilitated by_____

a) GA3
b) BPA
c) ABA
d) 2,4 D

(xvi) Which ones produce androgenic haploids in anther cultures?

a) Anther wall
b) Tapetal layer of anther wall
c) Connective tissue
d) Young pollen grains.

(xvii) Haploid plants are preferred over diploids for mutation study because in haploids

a) Recessive mutation express immediately
b) Induction of mutations is easier
c) Culturing is easier
d) Dominant mutation express immediately

(xviii) Haploid plants are produced in large scale by

a) Pollen culture
b) Anther culture
c) Overy culture
d) All

(xix) Haploid plant produced from male gametophytes is called

a) Gynogenesis
b) Androgenesis
c) Phytogenesis
d) Pyrogenesis

(xx) Media room of a plant tissue culture lab should consist of the following EXCEPT…?

a) pH meter
b) Autoclave
c) Digital balance
d) Biosafety cabinet

(xxi) In growth room, humidifier serves as…?

a) Contaminant reducer
b) Humidity reducer
c) Temperature controller
d) Media drying preventer

(xxii) Any part of the plant can give rise to an entire new plant given the right conditions…. It is called?

a) Totipotency
b) Pluripotency
c) Multipotency
d) Unipotency

(xxiii) Plant tissue culture is a practice used to propagate plants under sterile conditions, often to produce _____ of a plant.

a) Bacteria
b) Clone
c) DNA
d) Gene

(xxiv) In palnt tissue Cultue, Which part shows maximum totipotency?

a) Xylem
b) Phloem
c) Meristem
d) Stem

(xxv) Opponents of gene therapy insist that

a) Germ-line therapy is permissible
b) Gene therapy is harmless
c) Reproductive freedom has limits
d) Reproductive freedom is a personal right

(xxvi) What is gene therapy?

a) A technique that treats or prevents disease using genes
b) Using the contents of gene as a spa therapy
c) Inserting younger genes into your body
d) None of the answers are correct.

to cause you to age less

(xxvii) Which of the following is NOT a current use of gene therapy?

a) A Chinese drug used to treat some cancers

b) A Russian drug to treat peripheral artery disease

c) A drug used to treat LPL

d) A drug used to improve the performance of athletes

(xxviii) Which of the following virus is not used in gene therapy?

a) Papillomavirus

b) Retrovirus

c) Adenovirus

d) Herpes simplex virus

(xxix) In coated pits, the cytoplasmic surface is coated with:

a) Calcium

b) Clathrin

c) Clathrim

d) Clathrix

(xxx) Which of the following is the process of choosing parent organisms for the characteristics that is wanted in their offspring?

a) Active selection

b) Reproductive selection

c) Selective breeding

d) Breeding selection

(xxxi) Which protein has been produced generating a transgenic sheep that is used for replacement therapy for individuals at risk from emphysema?

a) Plasminogen activator (tPA)

b) ?-anti trypsin (AAT)

c) Casein

d) Amyloid precursor proteins

(xxxii) DNA into fish is injected into

a) Pronuclei

b) Cytoplasm

c) Both Pronuclei and Cytoplasm

d) None

(xxxiii) Chromosomes may be isolated from metaphase cells by

a) Hypertonic lysis
b) Hypotonic lysis
c) Either Hypertonic lysis or Hypotonic lysis
d) Isotonic lysis

(xxxiv) Genetic change can occur only in

a) One way
b) Two ways
c) Three ways
d) Four ways

(xxxv) Animal pharming can be defined as

a) Growing animals for farming
b) Programming animals to produce novel products
c) Generating transgenic animals for farming
d) None of these

(xxxvi) Which of the following statements best describes a clone?

a) An artificial life form
b) An offspring where all of the genetic material in every cell is identical to that of both parents
c) An offspring where all of the genetic material in every cell is identical to that of one of its parents
d) A type of sheep

(xxxvii) Which of the following statement is correct?

a) Variation is caused by genes
b) Variation is caused by the environment
c) Variation can be caused by both genes and the environment
d) None of these

(xxxviii) Which of the following gene have been introduced into the transgenic fish?

a) Human or rat gene for growth hormone
b) Chicken gene for delta crystalline protein
c) E. coli gene for ?-
d) All of these

galactosidase

(xxxix) Cloning is a method by which numbers of genetically identical organisms are derived from a single organism by

a) Vegetative propagation
b) Vegetative initiation
c) Vegetative termination
d) None of these

(xl) DNA microinjection into the egg has been used to produce which of the following transgenic animals?

a) Mice
b) Chicken
c) Pigs
d) All of these

(xli) Enucleation of the cells can be achieved by treating the cells with

a) Polyethylene glycol
b) Cytochalasin b
c) Both Polyethylene glycol and Cytochalasin b
d) Alcohol

(xlii) Superovulation is an

a) Increased ovulatory response by external hormonal therapy
b) Decreased ovulatory response by external hormonal therapy
c) Decreased ovulatory response by internal hormonal therapy
d) Increased ovulatory response by internal hormonal therapy

(xliii) Which of the following best describes artificial insemination?

a) Transplanting an embryo into the uterus
b) Fertilization of an egg in a test tube
c) Selectively breeding healthy animals
d) Taking the sperm and placing it directly

(xliv) Which part of a cell carries the information that is passed from one generation to the next?

a) Cell
b) Nucleus
c) Cytoplasm
d) Chloroplast

(xlv) In which year, Dolly the first mammalian clone was born?

a) 1995
b) 1996
c) 1997
d) 1998

(xlvi) Embryo transfer (ET) refers to the technique by which fertilized ova are collected from the reproductive tract of a genetically

a) Superior female and transferred to the inferior
b) Inferior female and transferred to the superior
c) Balanced female
d) None of these

(xlvii) The nucleous of mature unfertilized ovum may be removed by

a) Irradiation
b) Surgery
c) Both Irradiation and Surgery
d) Neutralization and homogenization

(xlviii) Karyoplast is

a) Cells devoid of cell wall
b) Nuclei
c) Nuclei with only some residual plasma membrane
d) Cell with nucleus

(xlix) The technique, mainly used for the diagnosing birth defects in the fetus by means of needle, is called

a) Amniocentesis
b) Ectogensis
c) Transplantation
d) All of these

(l) Which of these established cell lines originate from a mouse embryo?

a) 3T3
b) BHK
c) HeLa
d) BTK

(li) Which of the following media is used for maturation of oocytes

a) DMEM
b) TCM-199
c) Ham’s F-10
d) Both TCM-199 and Ham's F-10

(lii) Which of the following is not supplemented with in vitro maturation media

a) Estradiol
b) FSH
c) LH
d) Progesterone

(liii) In cloning, donor somatic cells should be in which stage of cell cycle

a) G1
b) G2
c) S
d) G0

(liv) You need to use a first generation sequencing method for de novo sequencing, which template should give optimum results for this project?

a) Genomic DNA
b) PCR product
c) Bacterial artificial chromosome
d) Plasmid DNA

(lv) In pour-plate method,the medium should be maintained at what temperature?

a) 37 degree C
b) 67 degree C
c) 45 degree C
d) 0 degree C

(lvi) Which of the following is a function of cryoprotective agents?

a) For long-term preservation of cultures
b) Prevents cell damage due to ice crystal formation
c) Prevents formation of ice
d) To trap the liquid nitrogen

(lvii) What is the temperature of liquid nitrogen?

a) -120 degree C
b) 0 degree C
c) -150 degree C
d) -196 degree C

(lviii) Which device is used to pick a single bacterial cell from a mixed culture?

a) Microscope
b) Micropipette
c) Microprobe
d) Micromanipulator

(lix) Which of the following has a larger diameter?

a) Well-separated colonies
b) Crowded colonies
c) Young colonies
d) Old colonies

(lx) What is the color of colonies of Staphylococcus aureus?

a) Pink
b) Red
c) Violet
d) Golden